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localization of the origins of these world shaking earthquakes, beside indicating the sub-oceanic sites of geological activity, positions where the hydrographer may expect to find unusual depths. They have also shown routes to be avoided by those who lay cables.

Seismograms of unfelt movements throw light upon what have up to recently been regarded as unaccountable deflections in the photograms from magnetographs, barographs, and other instruments sensible to slight displacements. They have also explained unusual rates in certain time-keepers. The most important scientific result obtained is dependent upon observations on the rate at which motion is propagated in various directions through the world. Until these observations had been made, our knowledge respecting the interior of the earth, chiefly related to its density and temperature, now we know much respecting its rigidity.

JOHN MILNE.

SCIENTIFIC NOTES AND NEWS.

OTTO H. TITTMAN, assistant superintendent of the U. S. Coast and Geodetic Survey, has been promoted to the superintendency, vacant by the resignation of Dr. Henry S. Pritchett, to accept the presidency of the Massachusetts Institute of Technology. Mr. Tittman has been connected with the Survey since 1867.

PROFESSOR JOHN C. SMOCK, for the last ten years geologist of the State of New Jersey, has tendered his resignation.

MR. OUTRAM BANGS has been appointed assistant in mammology in the Museum of Comparative Zoology at Cambridge, Mass.

SIR JOSEPH HOOKER, the eminent English botanist, has been elected a foreign associate of the Paris Academy of Sciences.

LORD LISTER has resigned his position on the Senate of the University of London as representative of King's College, and Dr. Thomas Buzzard has been appointed in his place.

MR. EVELYN B. BALDWIN has sailed for Europe to examine methods of polar exploration, and to secure equipment for the proposed expedition under the auspices of Mr. Ziegler.

PROFESSOR CARL GEGENBAUR has received

the Swammerdam medal of the Amsterdam Society of Medical and Natural Science.

MR. LEROY ANDERSON, who was this year called from Cornell University to the University of California as instructor on dairy husbandry, has been offered the position of chief agriculturist in the Philippines. Mr. Lawrence M. Jacobs, of the Treasury Department, has been appointed statistician of the Taft Philippine Commission.

DR. A. DONALDSON SMITH, after lecturing before the Royal Geographical Society, has returned from England to his home in Philadelphia.

DR. ROBERT T. HILL, of the U. S. Geological Survey, non-resident lecturer to the University of Michigan, is now delivering a series of lectures at that University on 'The Industrial Significance of the West Indies to the United States.'

AN executive committee has undertaken to erect a bust of the late Professor J. B. Carnoy in the cytological laboratory established by him in the University of Louvain. An honorary international committee has been formed, including in America Messrs. Agassiz, Eigenmann, Macallum, McMurrich and Minot.

It is proposed to found two memorials in honor of the late Miss Mary Kingsley, one a small hospital at Liverpool for the treatment of tropical diseases and one a Society for the study of the natives of West Africa. It is planned "that the 'Mary Kingsley Society' should employ a trained ethnologist, both to collect and arrange in scientific form the material which is thus already on record, and to institute and direct research for further material of the same sort; and it is intended that the Society, after the manner of the Royal Asiatic Society, should periodically publish the results which it obtains and should thus provide additional knowledge by which European relations with West Africa may be most safely and effectively directed, with profit both to the natives and to the Empire."

DR. BURKE AARON HINSDALE, professor of the science and art of teaching at the University of Michigan since 1888 and the author of various

publications on education and history, died on November 29th aged 63 years.

PROFESSOR MARSHAL OLIVER, of the Department of Marine Engineering, U. S. Naval Academy, died on November 26th at the age of 57 years.

PROFESSOR GEORGE FREDERICK ARMSTRONG, professor of engineering at Edinburgh University, died on November 14th. He was born in 1842 and became professor at Edinburgh in 1885.

DR. JOHN COCKLE, who was one of the oldest members of the medical profession in Great Britain, having qualified as a member of the Royal College of Physicians in 1835, died on November 14th. Dr. Cockle was in 1897 president of the Medical Society of London and was the author of various papers on diseases of the heart and of the organs of respiration, on the poison of the cobra, etc.

THE ninth annual meeting of the American Psychological Association will be held at Johns Hopkins University on December 27th, 28th and 29th, under the presidency of Professor Joseph Jastrow.

THE American Physiological Society will hold its thirteenth annual meeting in Baltimore on Thursday and Friday, December 27 and 28, 1900. The usual smoker will be held on Wednesday evening, December 26th. Those who will require apparatus or other necessities for the making of demonstrations may communicate with Professor W. H. Howell, Johns Hopkins University.

DR. ADAM PAULSEN, director of the Meteorological Institute of Copenhagen, has gone to North Finland to study the aurora. He undertook a similar expedition last winter to North Iceland.

MR. MARSHALL H. SAVILLE, of the American Museum of Natural History, sailed from New York, on November 21st, for Mexico, where he will spend some six months exploring the ruins of Mitla.

MR. ALFRED P. MAUDSLAY passed through New York on November 27th, on his way to Oaxaca, Mexico.

MR. WALTER R. HARPER has explored some

rock-shelters near Port Hacking, New South Wales, finding stone axes at a depth of five feet. Bone needles were also found in the same deposits.

ACCORDING to Reuter's Agency advices from Laurvig announce that Captain Stökken arrived there on November 20th, and expressed his readiness to take part in the expedition being organized by the Duke of Abruzzi, who is now at Laurvig, to search for the three missing men of the Duke's former expedition, among them being a son of Captain Stökken. The expedition will probably start from Göttenborg on board the whaler *Cappella*, which has been chartered by the Duke and will probably reach Franz Josef Land in the middle of July. The island will then be thoroughly searched. The expedition will be composed solely of Norwegians.

WE learn from *Nature* that early in the summer a memorial was submitted to the Governments of South Australia and Victoria praying that facilities might be granted to Mr. Gillen, one of the inspectors of aborigines, and Professor Baldwin Spencer for the continuance of their investigations into the habits and folk-lore of the natives of Central Australia and the Northern Territory. The memorial, which was signed by all British anthropologists and many prominent representatives of other sciences, has met with a prompt and generous response. The Government of South Australia has granted a year's leave of absence to Mr. Gillen, and the Government of Victoria has provided a substitute for Professor Spencer during his absence from Melbourne. Mr. Syme, the proprietor of the Melbourne *Age*, has contributed \$5,000 towards the ordinary expenses of the expedition. The Government of South Australia has also allowed the expedition to make use of the depôts and staff of the Transaustralian telegraph for the forwarding and storage of supplies. The explorers start in February, and it may be confidently anticipated that, if the winter rains make conditions favorable for traveling, they will be rewarded with the same conspicuous success which attended their expedition of three years ago; although the task before them requires even greater tact, since the natives of

the Northern Territory are more difficult to deal with than the aborigines of the center, who know Mr. Gillen and regard him with the utmost confidence. The tribes of the Mac-Donnell Ranges will be studied even more minutely than before, and afterwards the explorers will go towards the Gulf of Carpentaria, along the Roper River, and, time permitting, proceed down the Daly and Victoria Rivers.

ACCORDING to a despatch from Berlin dated December 1st, the Duc de Loubat has presented to the Berlin Museum of Ethnology a valuable collection of Central American antiquities.

MR. FREDERICK STEARNS, of Detroit, who gave the Stearns collection of musical instruments to the University of Michigan, has sent word from Europe, where he now is, that he has purchased two hundred more instruments to be added to the collection.

MR. RICHARD JAMES WILKINSON, of the Straits Settlements Civil Service, has presented to Cambridge University his entire collection of books in the Malay language amounting to 63 MSS. and about 50 lithographed or printed volumes.

EX-GOVERNOR PILLSBURY, of Minnesota, has given 1,000 acres to the State Forestry Board for the purpose of encouraging State forestry reserves in Minnesota and giving the State Board a chance to experiment with cut-over timber tracts, with a view to determining the extent to which the growth of timber can be renewed. Mr. Pillsbury specifies that two-thirds of the revenues which may be derived from his gift must go to the State University at Minneapolis.

At the monthly meeting of the London Zoological Society on November 24th, it was stated that during the months of August, September and October there had been 483 additions made to the Society's collection of living animals, among which special attention was called to two tenrecs (*Centetes ecaudatus*), deposited by the Hon. Walter Rothschild, M.P.; to a Ludwig's bustard (*Eupodotis Ludwigi*) from Port Elizabeth, presented by Mr. J. E. Matcham, and to a bouquet's Amazon (*Chrysotis bouqueti*) from Dominica, West Indies, acquired by purchase, all new to the collection. It was

also stated that during the same period there had been 270,578 visitors to the Society's gardens, being an increase of 11,241 as compared with the corresponding period in 1899. The receipts under this head of income consequently showed during this period a substantial increase. The meeting adjourned until December 20th next.

THE report of the Austrian Medical Commission of the Vienna Imperial Academy of Science, sent to Bombay, in 1897, to study the plague, states that some animals, including man, may be readily infected when the virulent matter is rubbed on the skin, even though the latter be totally free from any lesions. The report also gives evidence to show that perfect immunity can be given to the most susceptible animals. It will be remembered that the work of the commission was cut short because of the accident resulting in the death of Dr. Müller in 1898.

THE Pekin correspondent of the London *Times* cables: "In pursuance of their regrettable policy of appropriation, the French and German generals, with Count von Waldersee's approval, have removed from the wall of Pekin the superb astronomical instruments, erected two centuries ago by the Jesuit fathers. Half of them will go to Berlin and the rest to Paris. The explanation of this act of vandalism is that, inasmuch as the return of the court is so improbable, such beautiful instruments should not be exposed to the possibilities of injury when Pekin is no longer the capital."

THE experimental and chemical departments of the research laboratories of the Royal Colleges of Physicians and of Surgeons on Victoria Embankment have been completely reorganized and are now well equipped for the carrying out of research work. During the year a grant of £100 has been voted by the laboratories committee to Mr. W. P. Bloxam, B.Sc., for his work upon the chemistry of antitoxic bodies. A grant of £25 was voted to the director for expenses incurred in his work upon the same subject from the Goldsmiths' Company's research grant. The research grant has also been utilized in supplying antitoxic serum to various general and children's hospitals. The

report gives descriptions of 204 specimens added to the physiological series of the museum, and also of various preparations added to the pathological series. The library contains more than 50,000 volumes, and is being increased at the rate of about 1,000 volumes a year. It is particularly rich in the transactions of societies and in periodicals, relating not only to medicine and surgery, but also to accessory sciences. The library includes a collection of portraits of members of the medical profession.

WE learn from *Nature* that a private conference was recently held at the Board of Trade to consider the protection of the delicate instruments in use at Kew and Greenwich Observatories from magnetic disturbance, through the working of tramways and railways in the metropolis by electricity. Sir Courtenay Boyle presided, and among the officials of the Board of Trade present were Mr. F. J. S. Hopwood, Sir Thomas Blomfield and Mr. Trotter. The observatories and kindred public departments were represented by Mr. Christie (the Astronomer-Royal), Professor Rücker, Mr. Glazebrook (Director of the National Physical Laboratory), Lieutenant-Colonel Raban (Director of Works at the Admiralty), Admiral Sir W. J. Wharton (Hydrographer to the Admiralty), and Professors Ayrton and Perry. Among those who attended as representatives of the railway and tramway interests concerned were Mr. George White (chairman) and Mr. J. C. Robinson (engineer) of the London United Tramways Company, Sir Benjamin Baker and Sir W. Preece.

MR. E. C. OLIVER of the mechanical engineering department of the University of Illinois, has succeeded, with the advice of Professor Breckenridge, in perfecting an automatic recording machine which records automatically different data with regard to the speed and power of engines. The recorder can be applied to either gas or steam engines or to a dynamometer car, and is capable of taking any, one or all, of eight readings by means of ink pens on an endless roll of paper. The recorder gives faithfully the speed of the engine, the number of the horse power exerted, the rate of the occurrence of the explosions and the number of revolutions per minute of a gas engine.

MR. HUGHES, United States Consul at Coburg, reports that in Coburg and neighboring parts of Germany considerable attention is being paid to electrical appliances that can be used on the farm. Near Ochsenfurt, in Bavaria, a company, composed of land owners and small farmers, has been organized for the establishment of an electrical system for use on their farms and in villages. The power is to be generated by steam and water and the current to be distributed from a central station to the places at which it is wanted. Sub-stations are to be established at given points, with the necessary apparatus for connecting with the farm or other machinery and also for lighting purposes in the houses, offices, roads and village streets.

THE Dutch cabinet submitted to the States General, on November 14th, a new bill proposing to drain the entire Zuider Zee.

THE field work of the Division of Forestry of the Department of Agriculture, which has been carried on in many parts of the country by parties of different sizes since last May, has now been largely completed for 1900. This summer's work was carried on in New York, Tennessee, Missouri, Colorado, South Dakota, Arkansas, Arizona, Washington, Oregon, California, a number of tree-planting States of the Middle West and, in a small way, in other States besides. Much new and valuable information has been collected, and a very large number of surveys has been made, of the results of which it will soon be possible to make practical use. The work which has thus been going on in the field consisted of making forest surveys and of gathering measurements and information about growth, stand, reproduction, etc. Much of it, as that in the Black Hills Forest Reserve, in the Adirondacks, and on the tract of the Sawyer & Austin Lumber Company in Arkansas, is preparatory to the preparation of what are called 'working plans,' or plans for the management and utilization of given tracts of timber. These are based not on any general rules, but on a thorough knowledge of the peculiarities of the forest on each tract, of the market and transportation facilities of the regions in which they are situated, and of the

financial necessities of each case. The rest of the work of the field parties has been more of the character of investigations—as, for instance, the examination of the influence of forest cover on waterflow which was made on the watershed of the Arrowhead river in southern California, the studies of the habits of growth and reproduction of the two most important lumber trees of the Pacific coast—the Red Fir and the Redwood, and the survey of the results of tree-planting undertakings which have been carried on in the northern part of the Mississippi Valley. During the coming winter the agents of the Division will spend most of their time in working up the results of the summer's surveys and in preparing reports on them, although there will doubtless be some field work as well.

THE total exports from the United States during the month of October, as shown by the records of the Treasury Bureau of Statistics, were \$163,093,597. The total for ten months ending with October, 1900, is \$1,194,775,205, or practically double that of the ten months ending with October, 1894. Exports exceeded imports during the ten months ending with October by \$499,667,936, while in the corresponding ten months of 1894 imports exceeded exports by \$96,663,369. The exports of last month were far in excess of any previous month, exceeding those of March of the present year, which hitherto had the highest record, by nearly \$30,000,000.

UNIVERSITY AND EDUCATIONAL NEWS.

YALE UNIVERSITY has received \$68,152 from the estate of the late John De Kovey.

IN an address to the students of Colorado College, Dr. D. K. Pearsons, of Chicago, announced that on January 1, 1901, he would make the college a gift of \$50,000 toward the cost of completing the new scientific building now in course of construction.

UNDER the will of the late Dr. D. J. Leech, professor of *materia medica* and therapeutics in the Owens College, Manchester, that college will eventually receive £10,000, for endowing a chair of *materia medica* and therapeutics.

THE University of Wisconsin has received \$1,000 from Charles F. Pfister and a like amount

from Fred Vogel, both of Milwaukee, to be expended in the purchase of books for the School of Commerce.

THE Yale University treasurer has bought an additional piece of property on Cedar Street in New Haven, by which, with earlier purchases, a continuous front of about 200 feet opposite the New Haven Hospital is secured for a new site for the Medical School, at a total cost of about \$60,000.

DR. DE WILDE, minister from the Argentine Republic, is interested in the establishment of ten agricultural and mechanical colleges in that country after American models. To this end there are twenty-eight students of the Republic now attending colleges in this country, both in the East and the West.

IN a letter to the *Times* Mr. T. Clifford Albutt states that in spite of constant efforts during the last two years the Chancellor of Cambridge University has received no more than £62,500, one half of which amount comes from the Chancellor himself, Lord Rothschild and Mr. Astor. "These funds are now being expended on the laboratories and museums of geology, botany, and pathology, which are most needed; but they will not meet the cost even of these; the botanical and pathological departments alone will cost more. Again, among the offices still vacant here for lack of funds are twenty-three of the readerships prescribed by the Commission as necessary. The normal salary of a reader is £400 a year; I should be surprised to hear that the average income of our present readers is more than £200. Our revenue on paper seems large no doubt, but the bulk of it is in trust for specific purposes, some of which are and some are not of paramount importance; every penny, however, that could be set free for development was so freed by the Royal Commission. * * * Unless the public by donation or bequest be more generous, we can hardly hope to keep in the van of modern education; yet for Oxford and Cambridge to fall back would be a national misfortune."

J. SHIRELY EATON, the statistician of the Lehigh Valley Railroad, has been elected to a chair of domestic commerce and transportation at New York University.